

	<b>Safety Data Sheet</b>	Version: 01 04 Mar 2011
"SOL Bulgaria" EAD	<b>Nitrogen (N<sub>2</sub>)</b>	Page 5

## 1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY.

1.1. **Product name:** NITORGEN

1.2. **Chemical formula:** N<sub>2</sub>

**REACH Registration number:** Not required

**Nitrogen is included in Annex IV/V of REACH, exempt from registration.**

1.3. **Uses:** Purge and inerting of reactors and tanks, protection and transfer of substances sensitive to oxygen, heat regulation and cooling of food and chemical reactions, chemical industry, heat treatment of metals, stirring of steel, degassing of aluminum, cutting of rubber, compressed gas in plastics production, freezing, packaging of food products in a variable environment, protection of the opposite side of the weldings, tempering of steel etc.

1.4. **Details of the supplier:**

"SOL Bulgaria" EAD

Sofia

Vladaiska reka Str. 12

Tel: (02) 9366449, Fax: (02)9367859

1.5. **Emergency telephone number** (02) 9366449

The contact number is only available in working time between 9 and 17 hrs.

## 2. HAZARDS IDENTIFICATION.

**Classification of the substance:**

**Classification according to EU Directive 67/548:** The product is not classified according to the Directive.

**Identification of hazards according to Regulation EC 1272/2008 (CLP):**

**Classification according to Regulation CE 1272/2008 CLP:** Compressed gas

- **Physical hazards:**

Gas under pressure, compressed gas - Attention (H280)

**Labeling:**

- **Pictogram**



- **Signal word:** **WARNING!**

**Hazard statements:** H280: Contains gas under pressure; may explode when heated.

**Safety recommendations:**

- **Storage:** P410+403: Keep away from direct sunlight. Keep in well-ventilated place

**HAZARDS: High pressure gas. May cause very fast suffocation. May cause dizziness and drowsiness. It is recommended a self-contained (individual) breathing apparatus for personnel rescue.**

**INHALATION:** Small concentrations may cause headache, dizziness, excitement, excessive salivation, vomiting.

**SKIN CONTACT:** Not hazardous.

**SWALLOWING:** This product is a gas at normal temperature and pressure.

**EYE CONTACT:** No data on adverse effects.

**Not hazardous for the environment.**

## 3. COMPOSITION OF THE SUBSTANCE:

3.1. **General characteristics of chemical substances and their percentage.**

Indexes	Limit values	CAS No.:	EINCS No.:
Nitrogen content, %	99.9	7727-37-9	231-783-9
Oxygen content, %	0.01	7782-44-7	231-956-9

### 3.2. Classification according to Regulation on classification, labeling and packaging of substances and mixtures.

Nitrogen is not classified as a hazardous chemical substance.

#### 4. FIRST AID MEASURES.

**INHALATION:** Remove casualty from hazardous area into fresh air. Give oxygen if breathing is difficult.

Seek for qualified medical assistance.

**SKIN CONTACT:** Skin injuries are not to be expected.

**SWALLOWING:** This product is a gas at normal pressure and temperature.

**EYE CONTACT:** Not hazardous.

#### 5. FIRE-FIGHTING MEASURES.

##### 5.1. Extinguishing media.

Non-flammable gas. In the event of fire with the presence of nitrogen use the available extinguishing media.

##### 5.2. Products of combustion.

No

##### 5.3. Specific hazards.

Evacuate from the area all personnel not involved in fire extinguishing.

##### 5.4. Special protective equipment for firefighters.

Special resistant to high temperature clothing, gloves, boots, breathing apparatus (Saturn, Draeger).

**LIMITS OF FLAMMABILITY IN AIR, %: Not applicable.**

#### 6. ACCIDENTAL RELEASE MEASURES.

##### 6.1. Personal precautions:

Use personal protective equipment, e.g. special working clothing, gloves, boots, breathing apparatus.

In the event of nitrogen leakage immediately evacuate all personnel from the hazard area.

If only a single cylinder is leaking move it to open area and let the gas to be dispersed.

Stop nitrogen leaking.

Provide ventilation of the room.

##### 6.2. Environmental precautions.

Try to stop leakage. Protect entry into sewer systems, basements, production premises or other places, where accumulation can be dangerous.

#### 7. HANDLING AND STORAGE.

##### 7.1. Handling.

Use personal protective equipment, e.g. special working clothing, gloves, safety glasses or face shield.

Keep cylinders off damage. Use a suitable hand truck or fork lifts to move cylinders. Do not drag, roll, slide or hit the cylinders. Never lift cylinders without the safety caps. Cap is intended solely to protect the valve. Never place objects inside the cap (e.g. wrench, screwdriver etc.). This can cause damage to the valve and lead to gas leakage. Open valve slowly to avoid the pressure impact. If the valve opens hardly stop operation and contact your supplier.

##### 7.2. Storage.

For the storage of nitrogen (gas), steel cylinders and gas holder to be used.

Store away from fire and heat sources. Cylinder heating up increases the gas pressure.

Store at temperature not higher than 50 °C.

The storage room shall be dry and well ventilated or with natural ventilation. The full and empty containers shall be stored separately.

Avoid falling and hitting of the cylinders.

##### OTHER HAZARDS DURING HANDLING, STORAGE AND USE:

**High pressure gas. Gas may cause increased salivation in the absence of sufficient oxygen.**

Close valve after each use; keep valve closed even if the cylinder is empty.

Avoid return flow back into the cylinder. This may cause cracking of the cylinder. When returning cylinders to the supplier, make sure that the valves are closed. In case of leakage close the cylinder valve.

#### 8. EXPOSURE CONTROL AND PERSONAL PROTECTION EQUIPMENT.

### 8.1. Exposure limits.

Nitrogen is not classified as a hazardous chemical. No data for limit concentrations.

### 8.2. Exposure control.

To be stored away from fire and heat sources since heating of the cylinder will increase the gas pressure and may cause explosion.

Provide reliable ventilation in the storage premises.

#### 8.2.1. Exposure control at working environment.

To provide natural and/or forced ventilation to prevent suffocation with nitrogen by inhalation.

Provide personal protection equipment, special working clothing and boots, gloves, breathing apparatus (Saturn, Draeger).

#### Respiratory protection.

Provide natural and/or forced ventilation and breathing apparatus (Saturn, Draeger).

#### Hand protection.

It is recommended to wear gloves during operation.

#### Eye protection.

It is recommended to wear safety glasses during operation.

#### Skin and body protection.

Use leather boots with metal plate and toe-cap. Wear protection clothing where needed.

#### 8.2.2. Environmental exposure control.

Do not discharge in enclosed spaces, especially at lower ground levels.

## 9. PHYSICAL AND CHEMICAL PROPERTIES.

Chemical type:	Non-metal
Group, period, unit	5A, 2, p
Appearance	Colorless gas

#### Atomic properties

Atomic mass:	14,0067 u
Atomic radius (calc):	65 (56)pm
Covalent radius:	75 pm
Van der Waals radius:	155 pm
Electronic configuration:	1s <sup>2</sup> 2s <sup>2</sup> 2p <sup>3</sup>
Oxydation states (oxides):	+3,5,2,0,-3
Crystalline structure:	Hexagonal

#### Physical properties

Physical state:	Gas
Density:	1.2506 kg/m <sup>3</sup>
Melting point:	63,14 K (-210 °C.)
Boiling point:	77,35 K (-195,8 °C).
Molar volume:	13,54x10 <sup>-3</sup> m <sup>3</sup> /mol
Specific melting heat:	0,3604 kJ/mol
Specific vaporization heat:	2,7928 kJ/mol

#### Other

Electronegativity:	3.04 (Pauling chart)
Specific heat capacity:	1040 J/(kg.K)
Specific electrical conductivity:	NA S/m
Thermal conductivity:	0,02598 W/(m.K)
Ionization potential:	1402,3 kJ/mol

#### Chemical properties

Nitrogen is an extremely inert non-metal due to the strong triple covalent connection in the molecules.

It reacts with:

1. Oxygen - forms directly NO, N<sub>2</sub>O, NO<sub>2</sub>, N<sub>2</sub>O<sub>3</sub>, N<sub>2</sub>O<sub>5</sub>.
2. Hydrogen - forms ammonia (NH<sub>3</sub>).
3. Metals at high temperatures - form salts (nitrides).

Nitrogen is unlikely soluble in water - 18 mg/l at 20 °C.

## 10. STABILITY AND REACTIVITY

### 10.1. Stability.

The product is stable by observation of the storage conditions.

### 10.2. Conditions to be avoided.

Immediate proximity to sources of heat and fire.

### 10.3. Materials to be avoided (inconsistency).

Under certain conditions nitrogen may react with lithium, titanium (above 800 °C) and magnesium in the formation of nitrides.

At high temperature it may also react with oxygen and hydrogen.

### 10.4. Hazardous products of degradation.

No

### 11. TOXICOLOGICAL INFORMATION

No toxicological effects of this product are known.

### 12. ECOCOLOGICAL INFORMATION.

#### 12.1. Ecotoxicity.

Nitrogen is not toxic and does not contaminate soil and water.

#### 12.2. Mobility.

See 12.1.

#### 12.3. Bioaccumulation.

**The product does not display any bioaccumulative properties.**

### 13. DISPOSAL CONSIDERATIONS

Do not attempt to release residual or unused quantity. Return the cylinder to the supplier.

### 14. TRANSPORT INFORMATION.

Nitrogen is transported in steel pressurized cylinders. The cylinders must be securely attached (in pallets) and with safety caps.

- UN №: 1066

- Labeling ADR:



#### 2.2: Non-flammable, non-toxic gas

- ADR/RID H.I. nr: 20

- Transport identification: NITROGEN, COMPRESSED

- ADR class: 2

- ADR/RID Classification code: 1 A

- Packing instructions: P200

- Other transport information: Avoid transporting with vehicle, where the load is not separated from the driver's seat.

Before transportation of the product:

- Make sure that the containers are secured.
- Make sure that the valves of the cylinders are closed and do not leak.
- Make sure that the valve protection mechanism is trouble free.
- Make sure that there is a good ventilation.
- Comply with the applicable rules.

### 15. REGULATORY INFORMATION.

**The Safety data sheet is prepared in compliance with the requirements of REACH Regulation EC 1272/2008 (CLP), standards and legislation in the field of health, safety and ecology.**

### 16. OTHER INFORMATION.

Standard texts warning of the risk associated with the use of the hazardous chemical (R-phrases): No  
Standard texts giving advices for safe storage and use of the hazardous chemical (S-phrases):

S9: The container shall be stored in a well ventilated area.

S23: Do not inhale the vapor.

Symbol: No

**"SOL Bulgaria" EAD is asking every nitrogen user to become familiar with the Safety data sheet and to be aware of the hazards of this product and of the safety information.**

This document is only intended for indication of correct and safe operation of the product by employees and customers with appropriate training. Persons receiving this information should make an independent estimation to determine the suitability for this specific purpose.